

ClearBand SAFE DNA Gel Stain Solution, 20,000x

Troubleshooting Guide

1 mL, 5 x 1 mL

Cat No: SDGS1, SDGS5

Use this guide for common staining and visualization problems encountered with ClearBand SAFE DNA Gel Stain Solution, 20,000x. The stain is used at 1x concentration in agarose or polyacrylamide gels and is compatible with UV and blue-LED detection systems suitable for EtBr-stained gels.

Before You Start - Quick Checks

1. Briefly vortex the 20,000x stain before use.
2. For precast gels, add 5 µL stain per 100 mL gel solution.
3. Mix the stain gently into the gel solution and avoid introducing air bubbles.
4. The stain may be added while the gel solution is still hot.
5. Allow the gel to solidify completely before electrophoresis.
6. For improved sensitivity, the datasheet recommends gel thickness below 0.5 cm.
7. Store at 4°C; the datasheet states stability for at least 1 year.

Problem	Most likely cause	Recommended action
DNA bands are very weak or not visible	The stain may have been under-dosed, not mixed uniformly, or the detection system may not be appropriate.	Confirm use of 5 µL per 100 mL gel, briefly vortex the stock before use, mix the gel solution uniformly, and verify that the imager supports UV or blue-LED detection for EtBr-compatible gels.
Uneven fluorescence across the gel	The stain may not have been distributed evenly in the molten gel before casting.	Swirl the flask gently after adding the stain and avoid localized addition without mixing.
Bubbles create dark or distorted areas	Air bubbles may have been introduced while mixing the stain into the agarose solution.	Mix by gentle swirling rather than vigorous shaking and remove visible bubbles before the gel solidifies.
Sensitivity is lower than expected	The gel may be too thick or the staining concentration may be below the intended 1x level.	Use the specified 5 µL per 100 mL gel and keep gel thickness below 0.5 cm when higher sensitivity is required.
Background fluorescence is excessive	Too much stain may have been added or the gel may have been prepared inconsistently.	Recalculate the stain volume from the 20,000x stock and use 5 µL per 100 mL gel. Prepare a fresh gel if the concentration is uncertain.
Band pattern appears distorted	The issue may arise from electrophoresis or gel-casting conditions rather than from the fluorescent stain itself.	Confirm that the gel is fully solidified, wells are intact, and the electrophoresis setup is functioning normally. Keep stain concentration constant while troubleshooting other variables.
Signal differs between UV and blue LED	Detection efficiency can depend on the instrument and illumination system.	The product is compatible with UV and blue LED. Use consistent imaging settings when comparing gels and verify that the instrument is suitable for EtBr-compatible gel detection.
Gel extraction or cloning performance is poor	The downstream problem may be unrelated to the stain; the datasheet states compatibility with gel extraction and cloning.	Keep the stain at the intended 1x concentration and follow the downstream purification/cloning workflow. If the issue persists, troubleshoot the extraction or cloning step separately.
Stain was added to hot gel solution	The user may be concerned that the stain was damaged by addition before cooling.	The datasheet states that the 20,000x stain can be added while the gel solution is still hot. Mix gently and proceed with casting.
Performance declines after storage	The solution may have been stored outside the stated conditions or beyond the stated stability period.	Store at 4°C and compare with a properly stored aliquot if stock performance is uncertain.

Still having trouble? Verify the 5 µL per 100 mL gel ratio, vortex the stock briefly, mix gently without bubbles, and confirm that the imaging system is compatible with UV or blue-LED detection. If sensitivity remains low, prepare a fresh gel with thickness below 0.5 cm.